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NASA

Earth Observing System Data and Information System Customer Satisfaction Results

October 31, 2012

CFI Group
Claes Fornell International



Today's Discussion

- Background
- Overview Key Results
- Detailed Analysis
- Summary

Background

Project Background

Objectives

- Measure customer satisfaction with the NASA Earth Observing System Data and Information System at a national level and for each Data Center
 - Alaska Satellite Facility Distributed Active Archive Center
 - Crustal Dynamics Data Information System
 - Global Hydrology Resource Center
 - Goddard Earth Sciences Data and Information Services Center
 - Land Processes Distributed Active Archive Center
 - MODAPS Level-1 Atmospheres Archive and Distribution System
 - NASA Langley Atmospheric Science Data Center
 - National Snow and Ice Data Center Distributed Active Archive Center
 - Oak Ridge National Laboratory Distributed Active Archive Center
 - Ocean Biology Processing Group
 - Physical Oceanography Distributed Active Archive Center Jet Propulsion Laboratories (JPL)
 - Socioeconomic Data and Applications Center
- Assess the trends in satisfaction with NASA EOSDIS specifically in the following key areas:
 - Product Search
 - Product Selection and Order
 - Delivery
 - Product Quality
 - Product Documentation
 - Customer Support
- Identify the key areas that NASA can leverage across the Data Centers to continuously improve its service to its users

Project Background

Measurement timetable

Finalized questionnaire	August 2012
Data collection via web Sending invitations spanned the first two weeks. Sending reminders spanned the last two weeks.	September 4, 2012 – October 1, 2012
Topline results	October 12, 2012
Results briefing	November 19, 2012

Project Background

Data collection

Those who answered for more than one data center:

Two: 109

Three: 13

Four: 5

Respondents

- 4,315 responses were received
- 4,315 responses were used for modeling

NASA Survey Responses						
Data Center Description	Original	Cleaned	Bounce Backs	Emailed a Survey Invitation	Responded	Response Rate
ASDC-LaRC	2834	102	95	2637	188	7%
ASF SAR DAAC	2206	116	81	2009	199	10%
CDDIS	8068	4252	--	3816	187	5%
GES DISC	2715	497	251	1967	117	6%
GHRC	833	58	38	737	66	9%
LP DAAC	41309	933	1081	39295	1968	5%
MODAPS LAADS	11134	325	457	10352	482	5%
NSIDC DAAC	9856	1020	925	7911	467	6%
OBPG/Ocean Color	4917	350	290	4277	176	4%
ORNL DAAC/FLUXNET	5501	147	142	5212	212	4%
PO.DAAC-JPL	2371	179	106	2086	138	7%
SEDAC	3435	107	101	3227	115	4%
Total	95179	8086	8212	83526	4315	5%

Project Background

Respondent information

Data center distribution is consistent with previous years. The most responses continue to come from LP DAAC, accounting for 46% percent of the total sample in 2012.

Data center	2008	2009	2010	2011	2012
ASDC-LaRC	6%	4%	5%	5%	4%
ASF SAR DAAC	3%	3%	3%	4%	5%
CDDIS	1%	4%	6%	2%	4%
GES DISC	6%	3%	3%	2%	3%
GHRC	3%	2%	2%	2%	2%
LP DAAC	27%	39%	41%	46%	46%
MODAPS/LAADS	18%	18%	17%	12%	11%
NSIDC DAAC	7%	8%	9%	10%	11%
OBPG/Ocean Color	14%	7%	6%	5%	4%
ORNL DAAC/FLUXNET	6%	4%	4%	6%	5%
PO.DAAC-JPL	5%	5%	3%	2%	3%
SEDAC	4%	3%	3%	3%	3%
Number of Respondents	2,601	3,842	4,390	3,996	4,315

Project Background

Respondent information

Demographics (when comparable) remain fairly consistent with 2011.

More respondents are from outside the USA than in previous years, increasing to 75% in 2012

How became aware could acquire Earth science data from NASA~	2008	2009	2010	2011	2012
Colleague	--	37%	38%	36%	35%
Global Change Master Directory	--	2%	2%	2%	2%
NASA or Data Center Web Site	--	31%	30%	29%	30%
NASA Sponsored Research/Data Provider/Affiliate Research Community	--	8%	8%	8%	8%
Science Conference/Workshop/Meeting	--	15%	15%	14%	14%
Scientific Literature	--	18%	20%	21%	22%
University	--	27%	29%	30%	30%
Web Search	--	34%	34%	37%	38%
Other	--	5%	3%	3%	3%
Number of Respondents	--	3,781	4,298	3,931	4,315

Currently located - USA vs All Others	2008	2009	2010	2011	2012
USA	32%	29%	27%	29%	25%
All Others	68%	71%	73%	71%	75%
Number of Respondents	2,601	3,842	4,390	3,996	4,315

General areas need or use Earth science data and services~	2008	2009	2010	2011	2012
Atmosphere	--	36%	36%	35%	34%
Biosphere	--	--	18%	20%	18%
Cryosphere	--	11%	10%	12%	12%
Land	--	65%	61%	65%	62%
Human dimensions	--	11%	10%	11%	11%
Near-real-time applications	--	--	14%	14%	15%
Ocean	--	26%	22%	21%	21%
Space geodesy	--	8%	9%	7%	9%
Calibrated radiance	--	14%	12%	12%	11%
Other general area	--	8%	7%	8%	10%
Number of Respondents	--	3,842	4,387	3,996	4,315

Project Background

Respondent information

Specific areas/
disciplines
Earth science
data is used is
consistent
with 2011
usage. Land
Cover and
Land Use
remained the
most
mentioned
areas at 43%
and 39%
respectively.

Specific areas need or use Earth science data and services~	2008	2009	2010	2011	2012
Agriculture	23%	24%	25%	26%	26%
Air quality	--	10%	10%	9%	10%
Atmospheric Composition	35%	12%	13%	10%	10%
Carbon Cycle	15%	13%	14%	14%	12%
Climate	31%	27%	27%	26%	26%
Climate Change	36%	36%	34%	33%	32%
Cryosphere - Glacier	--	--	6%	6%	6%
Cryosphere - Permafrost	--	--	2%	2%	2%
Cryosphere - Sea Ice	--	7%	6%	6%	6%
Cryosphere - Snow	--	9%	7%	8%	8%
Ecological forecasting	--	13%	12%	12%	11%
Ecosystems	29%	26%	27%	30%	26%
Energy	--	--	8%	7%	7%
Hydrology	--	--	24%	27%	25%
Land Cover	44%	47%	45%	46%	43%
Land Use	36%	40%	41%	40%	39%
Modeling	25%	28%	26%	25%	19%
Natural Disasters/Natural Hazards	18%	20%	19%	20%	19%
Ocean Color Radiometry	--	14%	9%	8%	7%
Ocean	29%	19%	17%	17%	16%
Population	--	7%	6%	6%	7%
Public Health	--	4%	4%	4%	4%
Resources	17%	15%	13%	12%	13%
Socioeconomics	4%	5%	4%	5%	4%
Solid Earth	6%	7%	7%	5%	6%
Space Geodesy	4%	7%	7%	6%	7%
Space Weather	3%	3%	3%	2%	3%
Sun-Earth Connections	3%	3%	2%	2%	2%
Sustainability	--	7%	8%	9%	8%
Water Resources	--	24%	21%	23%	23%
Weather	18%	15%	16%	15%	15%
Other specific area	8%	8%	6%	5%	6%
Atmospheric Dynamics	--	--	--	12%	11%
Geology	--	--	--	15%	16%
Lightning	--	--	--	3%	3%
Number of Respondents	2,564	3,834	4,387	3,996	4,314

* Multi-select question; Answer choices added in 2010 and 2011; Language to question was changed slightly in 2009.

Project Background

Respondent information

Demographics (when comparable) remain fairly consistent with 2011.

Downloaded data or data products	2008	2009	2010	2011	2012
Downloaded	--	96%	94%	93%	91%
Have not downloaded	--	4%	6%	7%	9%
Number of Respondents	--	3,842	4,390	3,996	4,315

Method of searching for data products or services	2008	2009	2010	2011	2012
Data center's or data-specific specialized search, online holdings or datapool	47%	56%	52%	60%	61%
Direct interaction with user services personnel	8%	6%	4%	3%	3%
Global Change Master Directory	3%	1%	1%	1%	1%
Internet search tool	32%	27%	17%	15%	17%
Land Atmosphere Near Real -Time Capability for EOS	--	--	--	--	2%
OPeNDAP	--	--	--	--	1%
Reverb	--	--	18%	14%	8%
THREDDS	--	--	--	--	0%
Did not search	--	7%	4%	4%	4%
Other	10%	4%	3%	3%	3%
Number of Respondents	996	2,600	4,114	3,699	3,938

Used a subsetting tool	2008	2009	2010	2011	2012
Yes, by band	--	5%	4%	3%	4%
Yes, by channel	--	2%	1%	1%	1%
Yes, by geographic area	52%	62%	49%	45%	43%
Yes, by geophysical parameter	9%	6%	4%	3%	3%
Yes, by both geographic area and geophysical parameter	39%	26%	19%	17%	15%
Did not use a subsetting tool	--	--	--	--	16%
No, did not need a subsetting tool	--	--	23%	32%	18%
Number of Respondents	1,954	2,461	3,357	3,673	3,177

Project Background

Respondent information

Respondents who answered “Data center’s or data specific search” to “method of search” were asked to specify their search method.

Earth Explorer (new option in 2012) emerged as the most used method, followed by MODIS Land Products Subsets and GloVis.

Data centers or data-specific specialized search online holdings or datapool	2010	2011	2012
DADDI	1%	0%	0%
Data Miner Tool	2%	1%	1%
Earth Explorer	--	--	20%
GDex	--	--	0%
Giovanni	6%	6%	4%
GloVis	24%	27%	17%
HITIDE	--	0%	0%
HyDRO	1%	1%	1%
IceBridge Data Portal	--	--	0%
LAADS	22%	17%	12%
Live Access Server (LAS)	--	--	1%
Mercury (Advanced Product Search)	0%	0%	0%
Mirador	2%	2%	2%
MISR Order Tool	1%	1%	1%
MIST	1%	2%	1%
MODIS Land Products Subsets	23%	23%	18%
NOESIS	0%	0%	0%
NSIDC Data Pool	--	4%	6%
PO.DAAC Dataset Discovery	--	--	3%
POET	1%	1%	1%
Polaris	--	0%	0%
SAGE	--	--	0%
SeaDAS	6%	5%	3%
Spatial Data Access Tool (SDAT)	2%	1%	1%
URSA	2%	2%	2%
Vertex	--	--	1%
WebGIS	3%	3%	2%
Other	5%	4%	4%
Number of Respondents	2,094	2,200	2,393

* New response options added in 2012.

Project Background

Respondent information

The majority of respondents (81%) have received data products in the last year.

Of those respondents, 95% say the data was delivered by their preferred method.

Web download and FTP retrieval are the most common delivery methods.

Got data products in the last year	2012
Got data products	81%
Did not get data products	19%
Number of Respondents	3,938

Getting data delivered the way you prefer	2012
Getting data delivered preferred way	95%
Not getting data delivered preferred way	5%
Number of Respondents	3,177

Data delivery method~	2012
Web download	56%
Web bulk download	16%
FTP immediate retrieval from online holdings	35%
FTP retrieved after order	42%
FTP via subscription	8%
Web-based visualization tool	8%
OPeNDAP	2%
OGC Web services	3%
Other	1%
Number of Respondents	3,014

* Due to questionnaire changes, questions are not comparable historically.

Project Background

Respondent information

A high percentage (91%) of respondents are getting data in their preferred format.

At 38%, GeoTIFF is the most preferred format.

Of the available response options, Fortran 90 is the preferred programming language at 17%.

Consider adding more language options as 37% chose Other.

Getting data in format you prefer	2012
Getting data in preferred format	91%
Not getting data in preferred format	9%
Number of Respondents	3,177

Format preferred	2012
ACSII	11%
Binary	4%
CEOS format (SIR-C/SAR data)	1%
e00	--
GeoTIFF	38%
HDF4	8%
HDF-EOS profile of HDF4	6%
HDF5	8%
HDF-EOS profile of HDF5	6%
JPEG, GIF, PNG, TIFF	5%
KMZ/KML	1%
NetCDF classic	5%
NetCDF4	3%
SHP	3%
Other	2%
Number of Respondents	2,903

Preferred programming language	2012
C	9%
C++	10%
C#	1%
Fortran 77	6%
Fortran 90	17%
Java	3%
Perl	4%
PHP	1%
Python	11%
Others	37%
Number of Respondents	550

Project Background

Respondent information

With Web Download being the most common delivery method, it's no surprise there was an increase in "Immediate retrieve", up from 23% to 28%.

Number of people using data, finding what you want, and platforms used for data analysis are consistent with 2011.

How long to receive data	2008	2009	2010	2011	2012
Immediate retrieve	28%	20%	23%	23%	28%
Less than an hour	--	18%	20%	23%	22%
Less than a day	32%	27%	27%	26%	26%
1-3 days	32%	27%	23%	22%	18%
4-7 days	8%	5%	4%	4%	3%
More than 7 days	--	2%	2%	2%	2%
Number of Respondents	2,452	3,601	4,040	3,673	3,177

Number of people using data received	2008	2009	2010	2011	2012
1	35%	29%	31%	33%	31%
2-4	43%	48%	48%	45%	47%
5 or more	22%	23%	22%	22%	22%
Number of Respondents	2,601	3,601	4,040	3,673	3,177

Finding what you want	2008	2009	2010	2011	2012
Finding	95%	94%	94%	93%	93%
Not finding	5%	6%	6%	7%	7%
Number of Respondents	2,601	3,601	4,040	3,673	3,177

Platforms use for data analysis~	2008	2009	2010	2011	2012
Windows	--	--	79%	78%	78%
Mac OS	--	--	11%	12%	13%
Linux	--	--	33%	33%	34%
UNIX	--	--	9%	8%	7%
Other	--	--	1%	1%	0%
Number of Respondents	--	--	4,038	3,673	3,177

Project Background

Respondent information

The new response option “Made my own using a programming language” debuts at 17%.

Tools used to work with data is generally consistent with 2011.

Used a software tool to work with the data	2008	2009	2010	2011	2012
Yes, used software tools	77%	94%	85%	87%	77%
Yes, made my own using a programming language	--	--	--	--	17%
No, I couldn't find what I needed	23%	6%	2%	2%	0%
No, I couldn't understand how to use it	--	--	2%	2%	1%
No, I did not need software tools	--	--	12%	10%	4%
Number of Respondents	1,177	3,499	4,040	3,673	3,177

Tools use to work with data~	2008	2009	2010	2011	2012
ArcGIS	--	--	50%	52%	59%
ENVI	--	--	43%	41%	44%
ERDAS/IMAGINE	--	--	29%	27%	28%
Excel	--	--	--	--	24%
Ferret	--	--	--	--	1%
Geomatica	--	--	5%	4%	4%
Global Mapper	--	--	8%	10%	12%
GrADS	--	--	6%	4%	4%
GRASS	--	--	--	--	9%
HDFView	--	--	16%	15%	12%
HEG	--	--	3%	3%	3%
IDL	--	--	24%	21%	18%
IDV	--	--	--	--	1%
IDRISI	--	--	7%	8%	7%
LAS	--	--	--	--	1%
MATLAB	--	--	25%	24%	24%
MODIS Reprojection Tool	--	--	19%	18%	17%
NCL	--	--	2%	2%	2%
Panoply	--	--	--	--	3%
Quantum GIS	--	--	--	--	15%
SeaDAS	--	--	7%	6%	6%
Other/OpenSource	--	--	20%	22%	17%
Number of Respondents	--	--	3,432	3,179	2,454

Project Background

Respondent information

Fewer respondents looked for documentation in 2012 (69%) compared to 2011 (74%).

Despite data product description decreasing from 80% to 66%, it remains the most used documentation type.

Product format is a close second at 61%.

Looked for or got documentation	2008	2009	2010	2011	2012
Looked	--	73%	72%	74%	69%
Did not look	--	27%	28%	26%	31%
Number of Respondents	--	3,842	4,390	3,996	4,315

Documentation used or looked for~	2008	2009	2010	2011	2012
Instrument specifications	--	7%	44%	43%	41%
Science algorithm	--	15%	50%	46%	45%
Product format	--	17%	67%	68%	61%
Search tools	--	--	--	--	12%
Data analysis tools	--	--	--	--	38%
Visualization tools	--	--	--	--	25%
Science applications	--	6%	30%	29%	25%
Data product description	--	49%	79%	80%	66%
Production code	--	1%	12%	10%	9%
Other documentation	--	5%	1%	2%	2%
Number of Respondents	--	2,615	3,120	2,894	2,992

Documentation was	2008	2009	2010	2011	2012
Delivered with the data	16%	18%	18%	17%	16%
Available online	70%	73%	75%	76%	74%
Not found	14%	9%	7%	7%	9%
Number of Respondents	2,580	2,793	3,162	2,954	2,992

Project Background

Respondent information

Demographics (when comparable) remain fairly consistent with 2011.

Requested assistance from user services office during the past year	2008	2009	2010	2011	2012
Requested assistance	--	28%	25%	24%	20%
Have not requested assistance	--	72%	75%	76%	80%
Number of Respondents	--	3,842	4,390	3,996	4,315

Method of requesting assistance	2008	2009	2010	2011	2012
By phone	4%	3%	2%	2%	2%
By e-mail	82%	84%	87%	80%	79%
Both by phone and e-mail	13%	12%	11%	10%	10%
In person at an event or conference	--	--	--	7%	9%
Number of Respondents	929	1,080	1,094	976	861

Able to get help on first request	2008	2009	2010	2011	2012
Able to get help	91%	89%	88%	91%	86%
Not able to get help	9%	11%	12%	9%	14%
Number of Respondents	929	877	892	877	817

Overview Key Results

NASA EOSDIS

Customer satisfaction remains steady

ACSI

	N=1016 2004	N=1263 2005	N=2857 2006	N=2291 2007	N=2601 2008	N=3842 2009	N=4390 2010	N=3996 2011	N=4315 2012
	75	78	74	75	77	77	77	77	77
	(+/-) 0.9	(+/-) 0.7	(+/-) 0.5	(+/-) 0.6	(+/-) 0.5	(+/-) 0.4	(+/-) 0.4	(+/-) 0.4	(+/-) 0.4

Overall satisfaction

How satisfied are you with the data products and services provided by [DAAC]?

79	82	78	80	81	81	81	81	81
----	----	----	----	----	----	----	----	----

Expectations

To what extent have data products and services provided by [DAAC] fallen short of or exceeded expectations?

73	73	71	73	74	73	74	74	74
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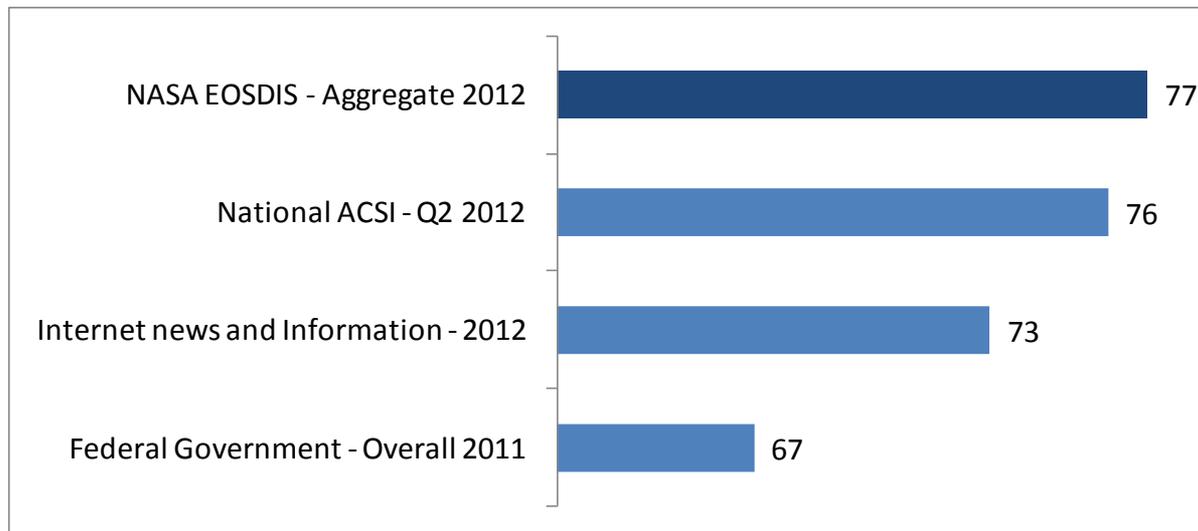
Ideal

How close does [DAAC] come to the ideal organization?

71	76	72	73	75	75	75	75	75
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NASA EOSDIS Benchmarks

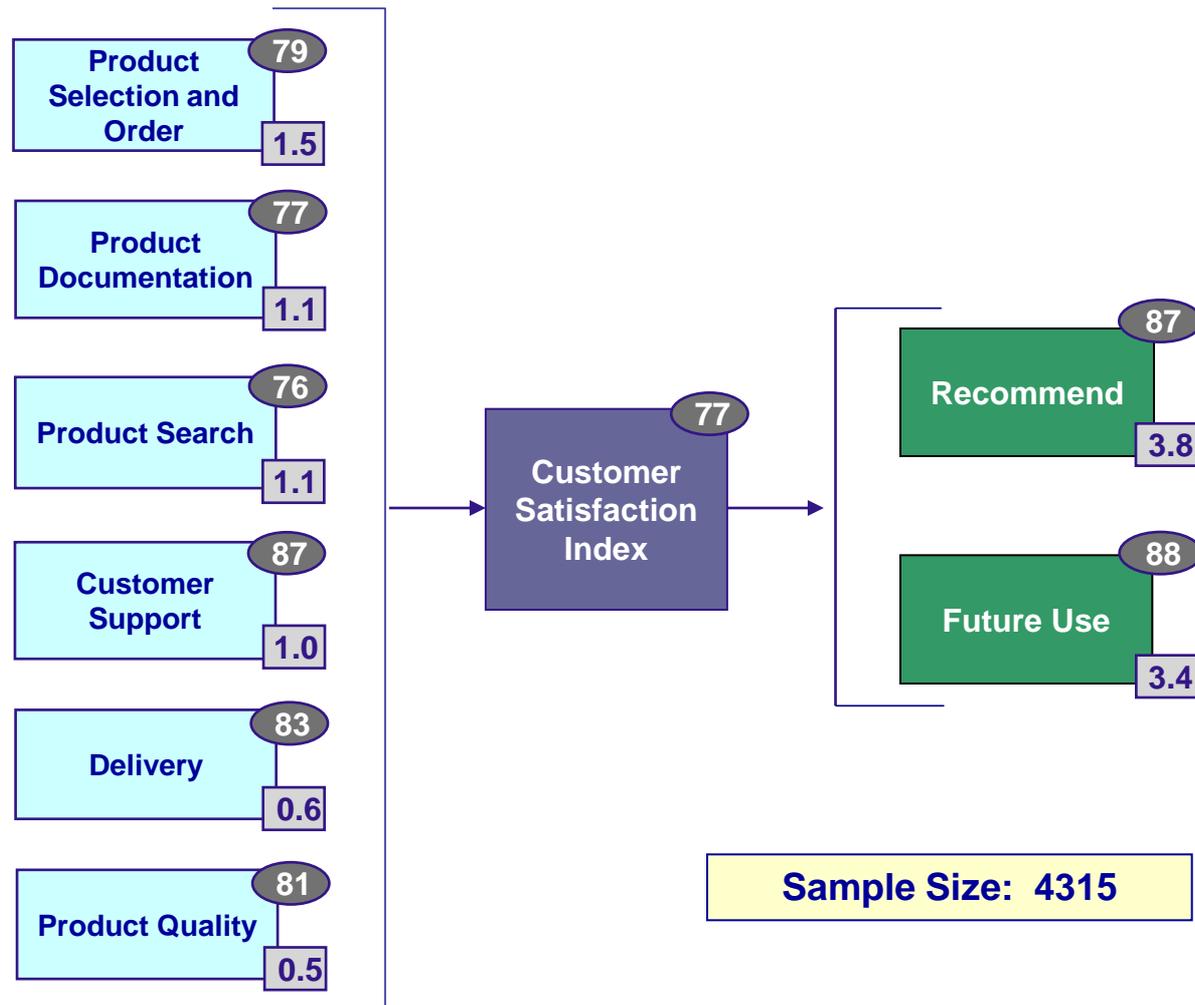
Strong performance continues ...



ACSI (Overall) is updated on a quarterly basis, with specific industries/sectors measured annually.
Federal Government (Overall) is updated on an annual basis and data collection is done in Q3.

NASA EOSDIS Model

Product Search/Selection/Documentation most critical



Scores The performance of each component on a 0 to 100 scale. Component scores are made up of the weighted average of the corresponding survey questions.

Impacts The change in target variable that results from a five point change in a component score. For example, a 5-point gain in Product Search would yield a 1.1-point improvement in Satisfaction.

NASA EOSDIS 2008 – 2012

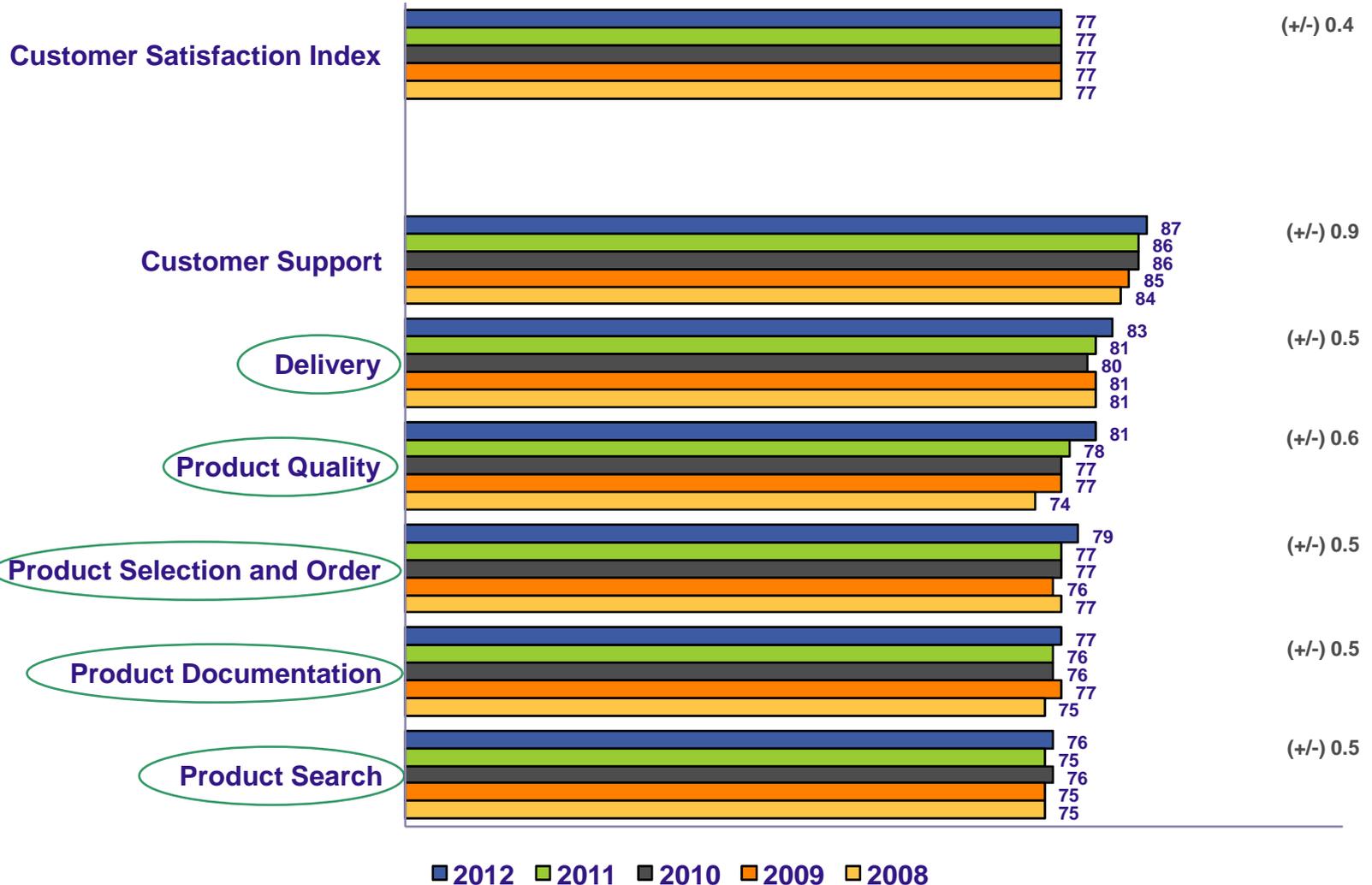
CSI holds steady; Drivers improve slightly

Customer satisfaction held at 77 in 2012.

All drivers increased at least 1 point in 2012.

Product Quality saw the biggest increase, up 3 points to 81.

Notably, Product Selection and Order, and Delivery each increased 2 points to 79 and 83, respectively.



Areas of Opportunity for NASA EOSDIS

Remain consistent year over year

Top Improvement Priority

Product Selection and Order (79)
Product Search (76)
Product Documentation (77)

Detailed Analysis

Score Comparison

USA respondents are more satisfied

75% of respondents are outside of the USA in 2012 vs. 71% in 2011.

	USA	All Others	Difference	Significant Difference
Sample Size	1,091	3,224		
Product Search	77	75	-2	*
Product Selection and Order	78	79	1	
Delivery	85	82	-3	*
Product Quality	81	81	0	
Product Documentation	77	78	1	
Customer Support	89	85	-4	*
Customer Satisfaction Index	79	76	-3	*
Likelihood to Use Services in Future	89	87	-2	*
Complaints	25	17	-8	*
Overall Quality	84	82	-2	*
Overall Usability	84	83	-1	
Non-modeled question	74	74	0	

Respondents inside the USA have become more satisfied, with a CSI score of 79, 3 points higher than respondents outside the USA.

USA customers rate Customer Support, Delivery and Product Search significantly higher than respondents outside the USA.

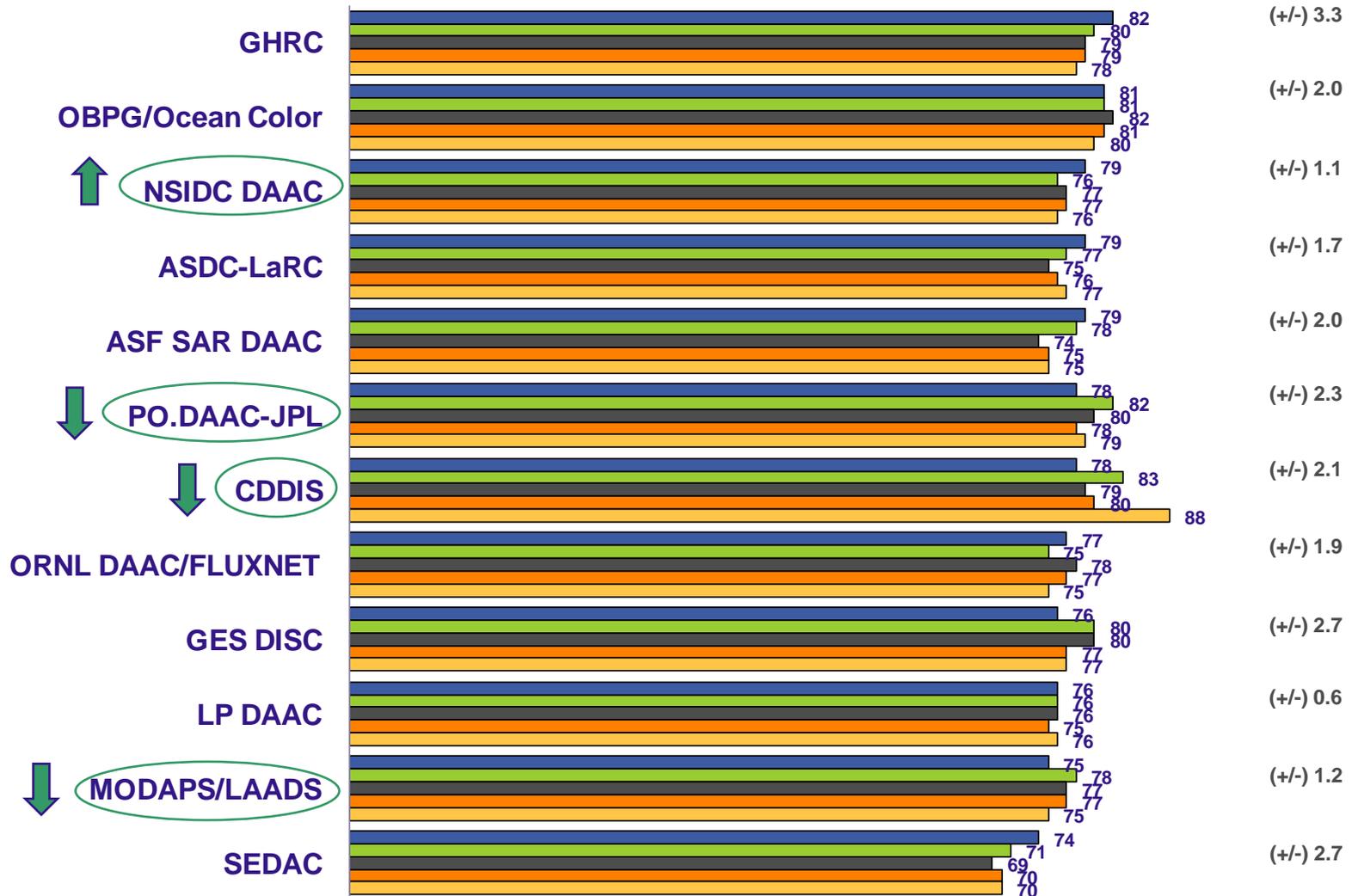
CSI by Data Centers – 2008-2012

Four data centers show significant score changes

GHRC (82) and OBPG/Ocean Color (81) emerge as the data centers with the highest satisfaction scores.

NSIDC DAAC increased significantly from 76 to 79.

PO.DAAC-JPL (-4), CDDIS (-5), AND MODAPS/LAADS (-3) all decreased significantly.



■ 2012 ■ 2011 ■ 2010 ■ 2009 ■ 2008

○ = Significant Difference vs. 2011

Product Search

Remains a key driver of satisfaction and is top priority

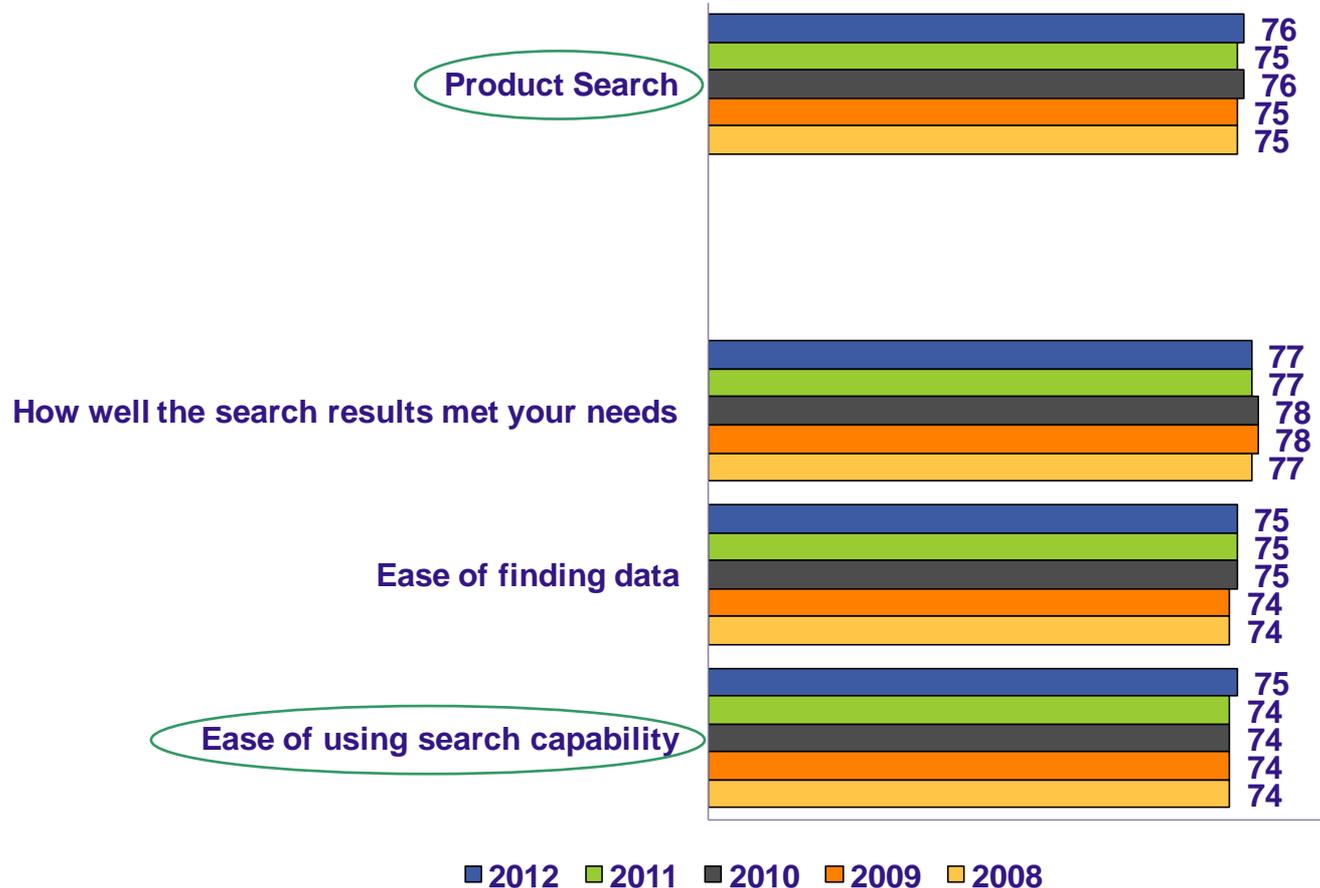
Data center's or data-specific specialized search, online holdings or datapool continues to be the most used search method, up to 61% in 2012 (60% in 2011).

Internet Search tool is the second most used search method at 17% (15% in 2011).

Reverb decreased to 8%, down from 14% in 2011.

After a 1 point decrease in 2011, Product Search rebounds back to a score of 76.

How well the search results met your needs continues to be the highest scoring Product Search attribute.



 =Significant Difference vs. 2011

Impact=1.1

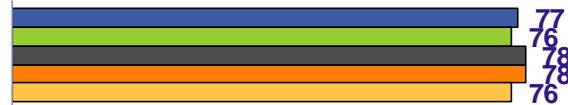
Product Search Score Comparison

By method for most recent search

Method of most recent search?

61%

Data center's or data-specific specialized search, online holdings or datapool



(+/-) 0.6

3%

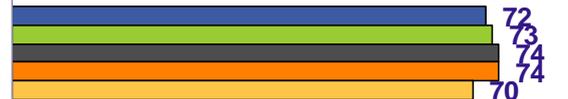
Direct interaction with user services personnel



(+/-) 2.9

1%

Global Change Master Directory



(+/-) 4.4

17%

Internet search tool



(+/-) 1.2

2%

Land Atmosphere Near Real -Time Capability for EOS



(+/-) 3.7

1%

OPeNDAP



(+/-) 8.2

8%

Reverb



(+/-) 1.6

0%

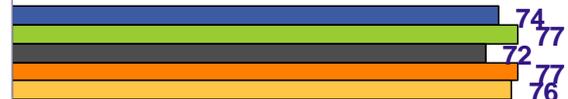
THREDDS



(+/-) 4.9

3%

Other



(+/-) 3.4

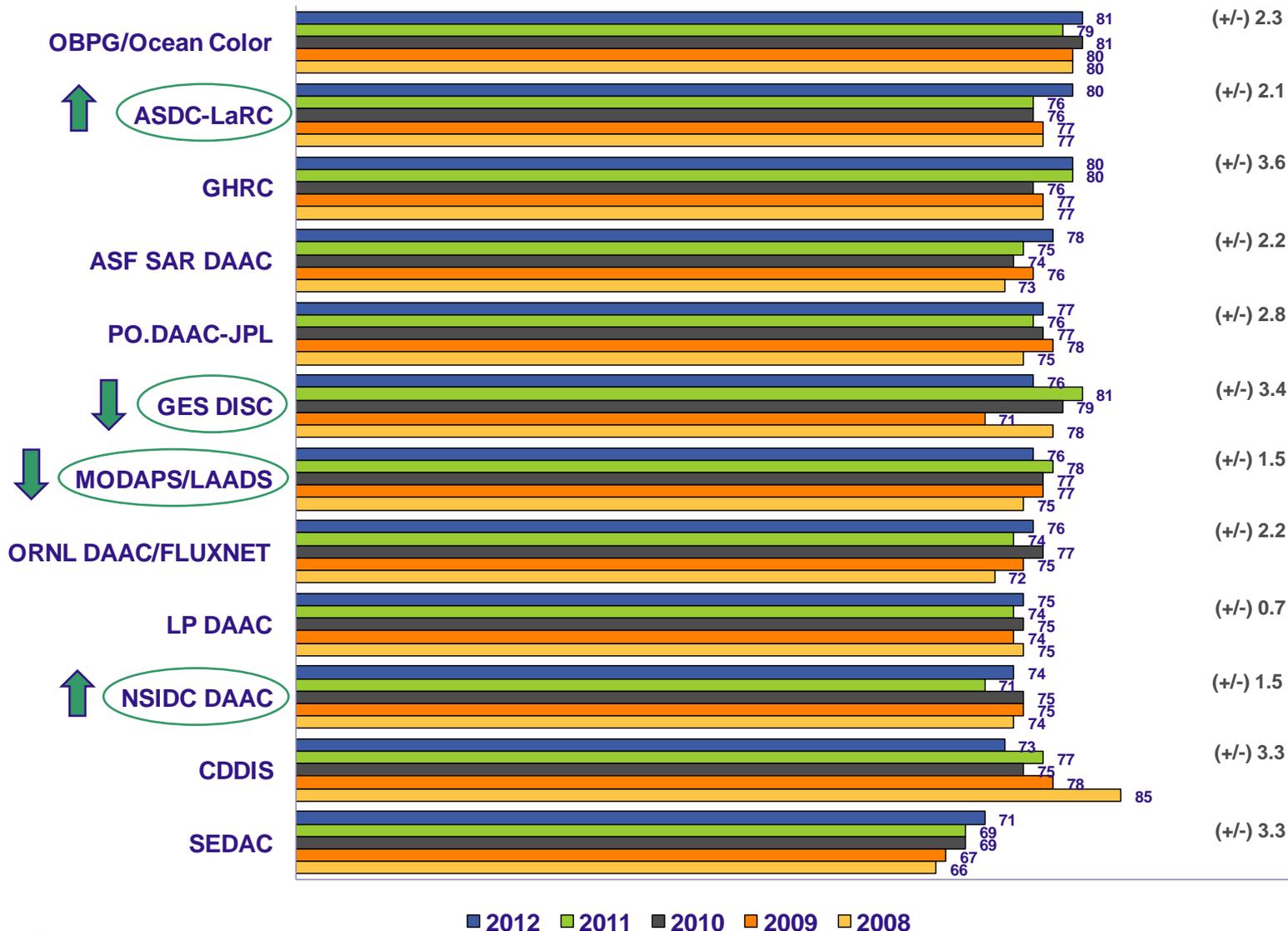
■ 2012 ■ 2011 ■ 2010 ■ 2009 ■ 2008

Product Search

Scores by Data Center; variation in the trends

OBPG/Ocean Color had the highest Product Search score in 2012.

ASDC-LaRC and NSIDC DAAC saw statistically significant score increases, while GES DISC and MODAPS/LAADS saw statistically significant score decreases.



=Significant Difference vs. 2011

Product Selection and Order

Also a top opportunity for improvements

Did you use a sub-setting tool?

43% said Yes, by geographic area

3% said Yes, by geophysical parameter

15% said Yes, by both geographic area and geophysical parameter

4% said Yes, by band

1% said Yes, by channel

34% said No, 18% didn't need one



93% of respondents said that they are finding what they want in terms of type, format, time series, etc. (93% in 2011)

■ 2012 ■ 2011 ■ 2010 ■ 2009 ■ 2008

○ =Significant Difference vs. 2011

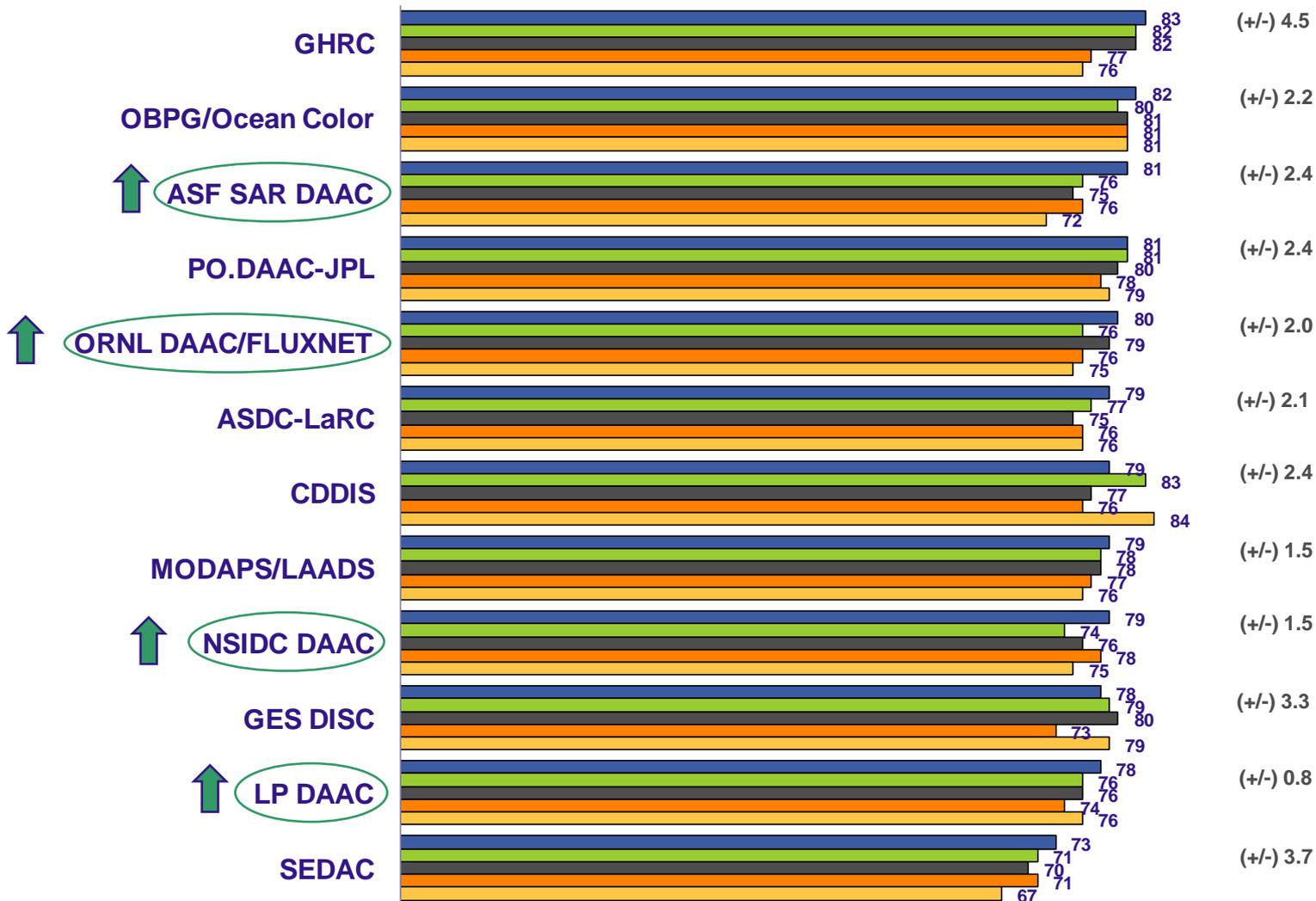
Impact=1.5

Product Selection and Order

Scores by Data Center

GHRC (83) and OBP/Color (82) rate Product Selection and Order highest.

ASF SAR DAAC, ORNL DAAC/FLUXNET, NSIDC DAAC, and LP DAAC all had significant score increases.



■ 2012 ■ 2011 ■ 2010 ■ 2009 ■ 2008

○ =Significant Difference vs. 2011

Product Documentation

Data product description remains most sought after

What documentation did you use or were you looking for?

Data product description
66%

Product format
61%

Science algorithm
45%

Instrument specifications
41%

Data analysis tools
38%

Visualization tools
25%

Science applications
25%

Search tools
12%

Production code
9%

Other documentation
2%

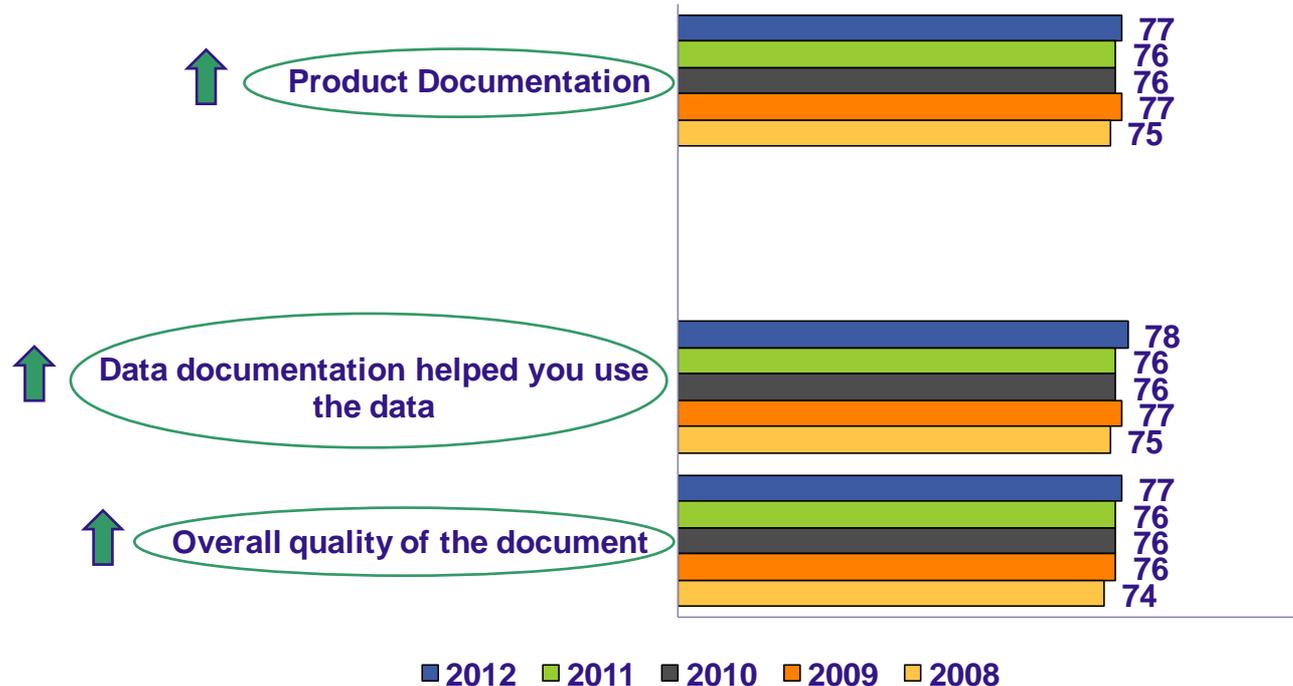
Was the documentation...

Delivered with the data (16% vs. 17% in '11)

Available online (74% vs. 76% in '11)

Not found (9% vs. 7% in '11)

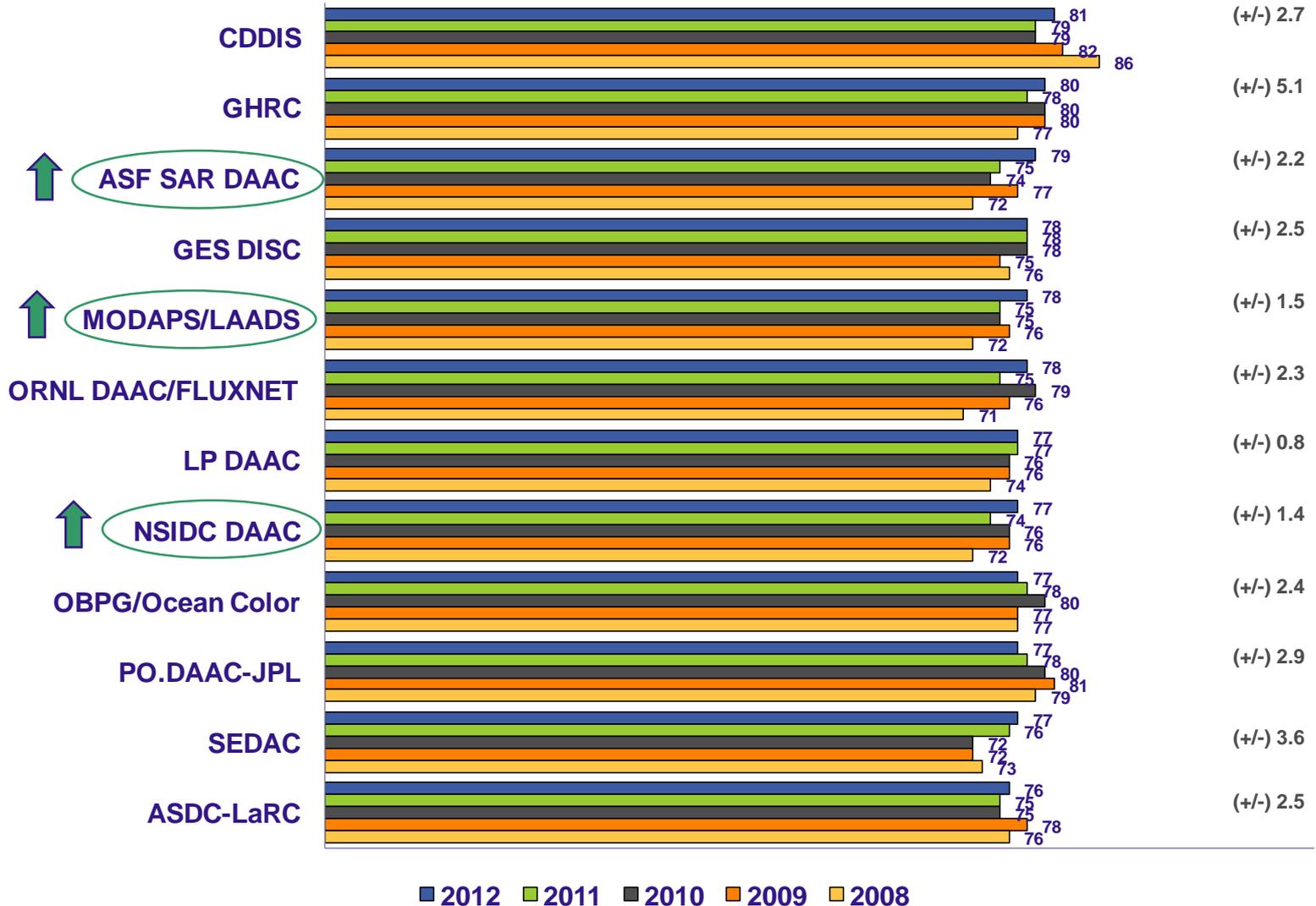
Respondents who could not find the documentation they were looking for have a much lower CSI score (66), compared to those who got it delivered with the data (79) or found it online (79).



Product Documentation

Scores by data center

CDDIS (81) had the highest score, followed by GHRC(80).



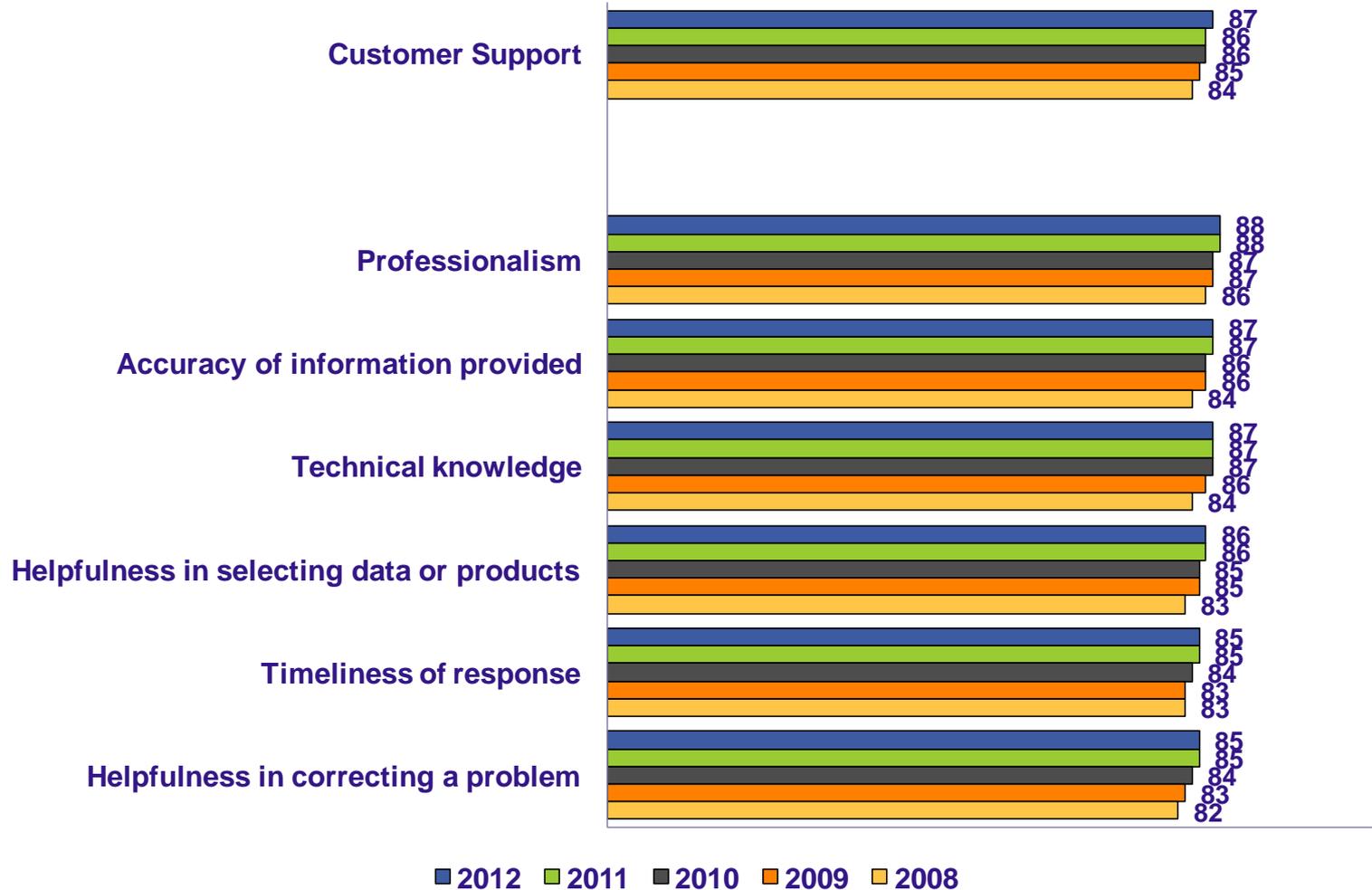
Customer Support

Maintain great performance

Did you request assistance from the Data Center's user services staff during the past year? No=80%. Of those who said yes, 79% used email, 2% used the phone, and 10% used both phone and email.

Customer Support continues to be the highest scoring performance area, increasing 1 point to 87.

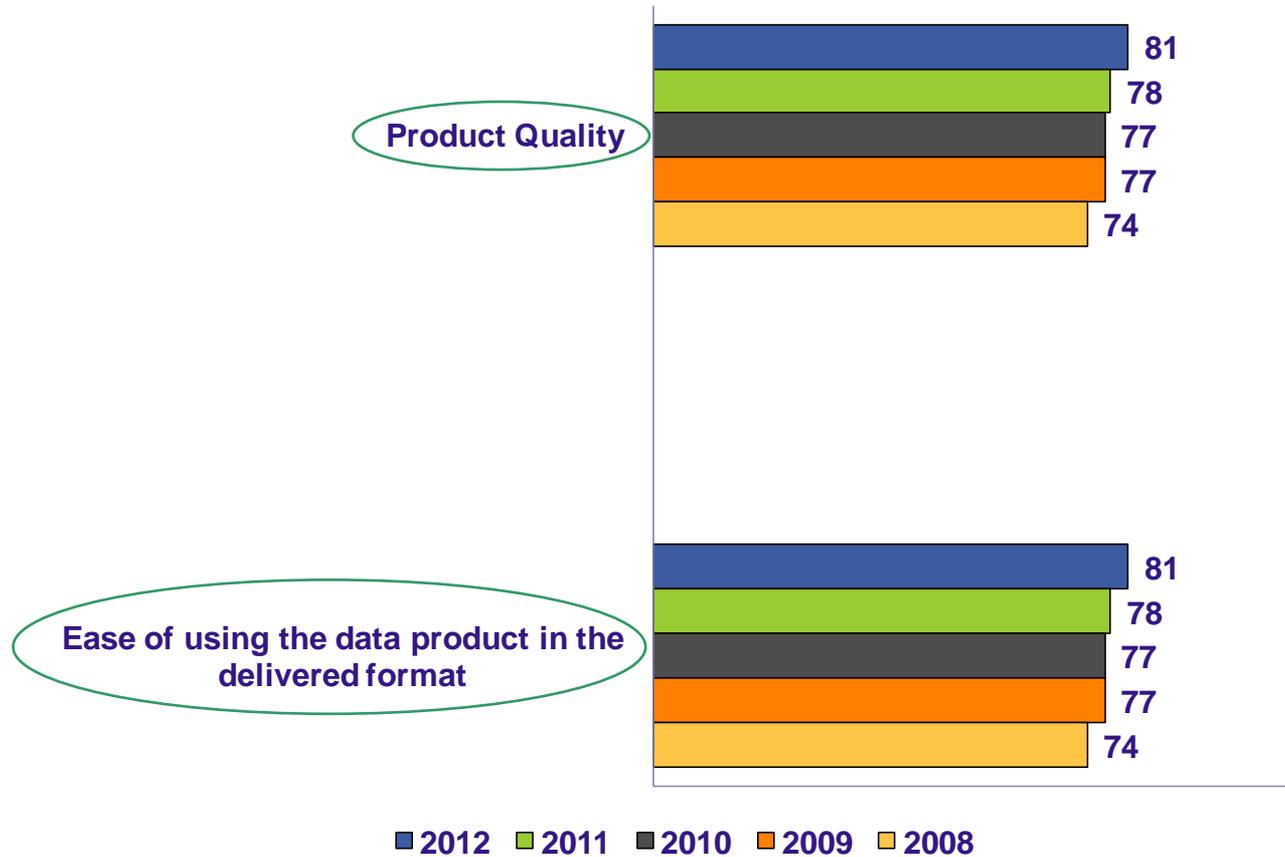
Of the respondents who requested assistance, 86% (91% in 2011) were able to get help on first request. These respondents continue to have a significantly higher CSI (83) than those who did not (69).



Product Quality

Three-point gain from last year

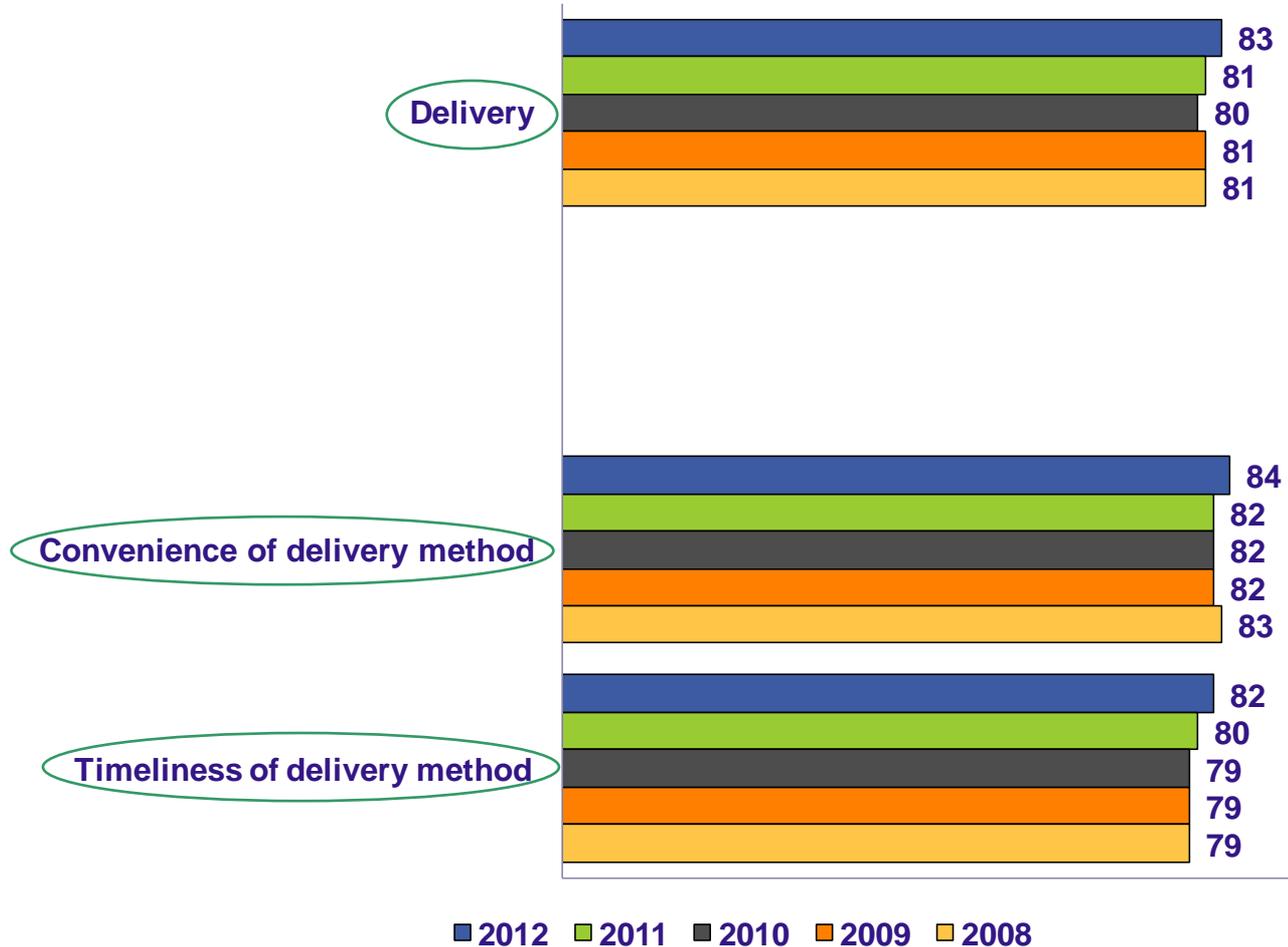
After little change since 2009, Product Quality increases 3 points to 81 in 2012 (4 point increase from 2009).



Delivery

Timeliness and Delivery up two points

Delivery continues to trend upwards with a 2 point increase to 83 (up 3 points from 2010).



Summary

Summary

- **NASA EOSDIS continues to meet their data users' needs as Satisfaction remained at the high score of 77 for the fifth consecutive year.**

- **All driver scores increased slightly in 2012, setting or equaling high marks since the beginning of the study in 2004.**
 - **Product Quality, Delivery, and Product Selection and Order saw the biggest gains, increasing 3, 2, and 2 points respectively.**
 - **Product Search, Product Documentation, and Customer Support each increased 1 point.**
 - **While Satisfaction remained unchanged, improvements in the satisfaction drivers prevented a decrease in customer satisfaction as users' needs and expectations continue to expand.**

- **Continue to focus on improving the top priority areas: Product Selection and Order, Product Search, and Product Documentation.**
 - **Focus on improving the product search functionality and navigation for the data center specific searches, as it is the most used method at 61%. Guidance can be taken from the data centers that have a high Product Search score: ASDC-LaRC, GHRC, and OBPG/Ocean Color.**
 - **Provide descriptions of data products in both layman's terms and detailed language to meet the needs of both the advanced and novice users.**
 - **Ensure data documentation is easily found or delivered with the data. Users who could not find data documentation are significantly less satisfied.**

Summary

- **View the higher scoring and higher impact drivers, Delivery and Product Quality, as second tier areas for improvement.**
 - **Ensure data products are delivered in a timely manner and all delivery options clearly explain the expected delivery time.**
 - **Continue to improve and expand the variety of data formats to ensure all customers are receiving data in their preferred format.**

- **Maintain a high Customer Support score as it is an high impact driver.**
 - **Provide customer support staff with the training and knowledge to help users resolve their issues on the first request.**
 - **Use data centers with high Customer Support scores as guidance on how to improve customer support across all data centers.**

Appendix

Customers over multiple years

Who have answered the survey multiple years ...

No significant differences were seen between 2011 and 2012 for those who have answered the survey over the last five years.

For those answering the survey over multiple years, score movement is mixed.

(Difference refers to 2012 vs. 2011)

	2008	2009	2010	2011	2012	Difference	Significant Difference
	Scores						
Sample Size	23	23	23	23	23		
Product Search	87	84	89	87	91	4	
Ease of finding data	84	87	91	89	90	1	
Ease of using search capability	86	79	88	84	89	5	
How well the search results met your needs	89	85	89	88	93	5	
Product Selection and Order	86	85	89	88	92	4	
Ease of selecting data products	84	83	91	91	93	2	
Description of data products	83	88	86	86	88	2	
Ease of requesting or ordering data products	90	85	90	88	94	6	
Delivery	85	90	89	90	92	2	
Convenience of delivery method	87	93	91	90	92	2	
Timeliness of delivery method	82	86	86	90	91	1	
Product Quality	83	84	89	86	91	5	
Ease of using the data product in the delivered format	83	84	89	86	91	5	
Product Documentation	82	84	83	85	82	-3	
Overall quality of the document	81	82	83	83	78	-5	
Data documentation helped you use the data	83	87	83	86	85	-1	
Customer Support	92	94	93	94	96	2	
Professionalism	92	94	92	96	98	2	
Technical knowledge	91	94	93	91	94	3	
Accuracy of information provided	94	96	92	96	96	0	
Helpfulness in selecting data or products	88	95	93	94	96	2	
Helpfulness in correcting a problem	94	94	94	94	96	2	
Timeliness of response	92	92	94	96	95	-1	
Customer Satisfaction Index	88	87	90	89	91	2	
Overall satisfaction	92	92	94	92	95	3	
Ideal	87	86	89	88	91	3	
Expectations	84	81	85	86	87	1	
Likelihood to Recommend	94	97	96	97	98	1	
Likelihood to recommend	94	97	96	97	98	1	
Likelihood to Use Services in Future	99	99	99	97	99	2	
Likelihood to use services in future	99	99	99	97	99	2	
Complaints	35	65	65	70	52	-18	
Reported a problem	35	65	65	70	52	-18	
Overall Quality	89	89	91	91	94	3	
Overall quality of the data product	89	89	91	91	94	3	
Overall Usability	87	88	91	90	92	2	
Overall usability of the data product	87	88	91	90	92	2	
How well problem was handled	92	90	88	92	92	0	
Problem handling	92	90	88	92	92	0	
Non-modeled question	--	--	89	87	91	4	
Ease of understanding the dataset description and options	--	--	89	87	91	4	

Customers over the past four years

Who answered the survey multiple times....

For those answering the survey in 2009, 2010, 2011, and 2012 scores for Delivery and Product Quality were significantly different.

(Difference refers to 2012 vs. 2011)

	2009	2010	2011	2012	Difference	Significant Difference
	Scores					
Sample Size	73	73	73	73		
Product Search	81	84	84	86	2	
Ease of finding data	82	85	85	88	3	
Ease of using search capability	77	82	82	85	3	
How well the search results met your needs	85	85	86	86	0	
Product Selection and Order	85	86	86	88	2	
Ease of selecting data products	84	88	87	90	3	
Description of data products	84	82	85	85	0	
Ease of requesting or ordering data products	86	87	86	90	4	
Delivery	88	88	88	92	4	*
Convenience of delivery method	90	89	88	93	5	*
Timeliness of delivery method	86	87	87	92	5	*
Product Quality	85	87	84	89	5	*
Ease of using the data product in the delivered format	85	87	84	89	5	*
Product Documentation	79	80	83	83	0	
Overall quality of the document	78	80	82	83	1	
Data documentation helped you use the data	81	79	84	83	-1	
Customer Support	90	92	94	93	-1	
Professionalism	92	93	95	95	0	
Technical knowledge	92	91	93	91	-2	
Accuracy of information provided	91	91	95	93	-2	
Helpfulness in selecting data or products	91	93	94	92	-2	
Helpfulness in correcting a problem	88	93	93	94	1	
Timeliness of response	88	94	93	92	-1	
Customer Satisfaction Index	84	85	86	87	1	
Overall satisfaction	90	90	90	91	1	
Ideal	82	83	83	86	3	
Expectations	79	81	82	83	1	
Likelihood to Recommend	95	93	94	95	1	
Likelihood to recommend	95	93	94	95	1	
Likelihood to Use Services in Future	95	95	96	96	0	
Likelihood to use services in future	95	95	96	96	0	
Complaints	45	45	53	45	-8	
Reported a problem	45	45	53	45	-8	
Overall Quality	88	87	89	91	2	
Overall quality of the data product	88	87	89	91	2	
Overall Usability	87	89	88	91	3	
Overall usability of the data product	87	89	88	91	3	
How well problem was handled	89	88	87	90	3	
Problem handling	89	88	87	90	3	
Non-modeled question	--	84	85	85	0	
Ease of understanding the dataset description and options	--	84	85	85	0	

Customers over the past three years

Who answered the survey in 2010, 2011 and 2012

For those answering the survey in 2011, 2010 and 2012 the score for Timeliness of delivery method went up significantly.

(Difference refers to 2012 vs. 2011)

	2010	2011	2012	Difference	Significant Difference
	Scores				
Sample Size	172	172	172		
Product Search	83	84	83	-1	
Ease of finding data	82	84	84	0	
Ease of using search capability	81	82	82	0	
How well the search results met your needs	84	85	83	-2	
Product Selection and Order	84	85	86	1	
Ease of selecting data products	84	86	87	1	
Description of data products	81	84	83	-1	
Ease of requesting or ordering data products	85	86	88	2	
Delivery	86	87	89	2	
Convenience of delivery method	88	88	90	2	
Timeliness of delivery method	84	85	88	3	*
Product Quality	85	84	85	1	
Ease of using the data product in the delivered format	85	84	85	1	
Product Documentation	80	83	81	-2	
Overall quality of the document	80	83	82	-1	
Data documentation helped you use the data	80	83	80	-3	
Customer Support	91	93	93	0	
Professionalism	92	94	95	1	
Technical knowledge	91	93	92	-1	
Accuracy of information provided	91	94	93	-1	
Helpfulness in selecting data or products	91	93	92	-1	
Helpfulness in correcting a problem	91	91	93	2	
Timeliness of response	89	92	92	0	
Customer Satisfaction Index	83	84	85	1	
Overall satisfaction	88	89	88	-1	
Ideal	81	82	83	1	
Expectations	79	81	82	1	
Likelihood to Recommend	92	93	93	0	
Likelihood to recommend	92	93	93	0	
Likelihood to Use Services in Future	94	95	94	-1	
Likelihood to use services in future	94	95	94	-1	
Complaints	30	40	34	-6	
Reported a problem	30	40	34	-6	
Overall Quality	87	89	89	0	
Overall quality of the data product	87	89	89	0	
Overall Usability	86	88	89	1	
Overall usability of the data product	86	88	89	1	
How well problem was handled	89	90	89	-1	
Problem handling	89	90	89	-1	
Non-modeled question	82	82	82	0	
Ease of understanding the dataset description and options	82	82	82	0	

Customers over the past two years

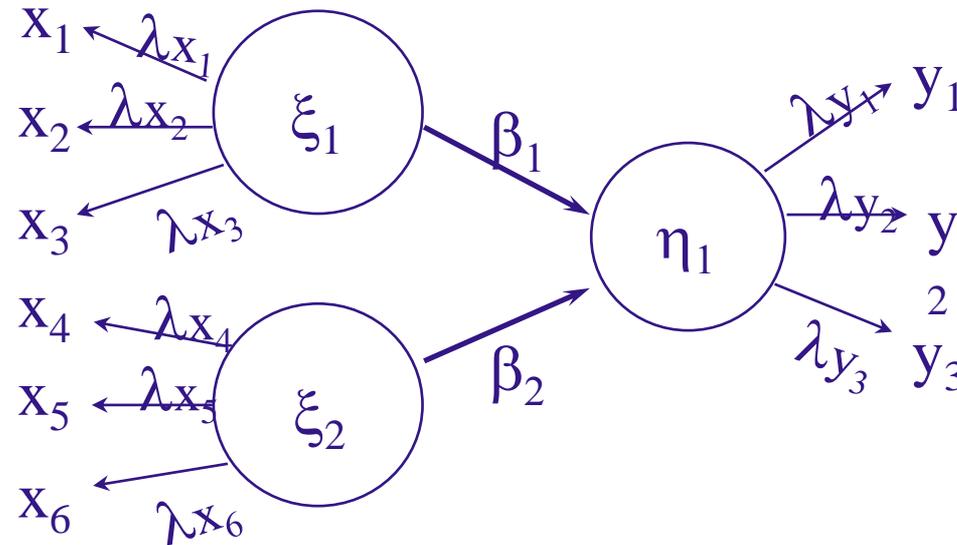
Who answered the survey in 2011 and 2012

For those answering the survey in 2012 and 2011, there are a number of statistically significant positive score differences.

(Difference refers to 2012 vs. 2011)

	2011	2012	Difference	Significant Difference
	Scores			
Sample Size	610	610		
Product Search	78	80	2	*
Ease of finding data	78	80	2	*
Ease of using search capability	77	80	3	*
How well the search results met your needs	79	81	2	
Product Selection and Order	80	82	2	*
Ease of selecting data products	80	83	3	*
Description of data products	78	80	2	*
Ease of requesting or ordering data products	81	84	3	*
Delivery	83	85	2	*
Convenience of delivery method	84	86	2	*
Timeliness of delivery method	82	84	2	*
Product Quality	80	83	3	*
Ease of using the data product in the delivered format	80	83	3	*
Product Documentation	78	79	1	
Overall quality of the document	78	79	1	
Data documentation helped you use the data	78	79	1	
Customer Support	88	89	1	
Professionalism	89	89	0	
Technical knowledge	89	88	-1	
Accuracy of information provided	89	89	0	
Helpfulness in selecting data or products	88	89	1	
Helpfulness in correcting a problem	88	88	0	
Timeliness of response	88	88	0	
Customer Satisfaction Index	80	80	0	
Overall satisfaction	84	84	0	
Ideal	77	78	1	
Expectations	77	78	1	
Likelihood to Recommend	89	90	1	
Likelihood to recommend	89	90	1	
Likelihood to Use Services in Future	91	90	-1	
Likelihood to use services in future	91	90	-1	
Complaints	28	30	2	
Reported a problem	28	30	2	
Overall Quality	84	85	1	
Overall quality of the data product	84	85	1	
Overall Usability	84	85	1	
Overall usability of the data product	84	85	1	
How well problem was handled	85	85	0	
Problem handling	85	85	0	
Non-modeled question	77	78	1	
Ease of understanding the dataset description and options	77	78	1	

The Math Behind the Numbers



$$x_i = \lambda_{xi} \xi_t + \delta_i, \text{ for } i=1,2,3 \text{ } t=1,2$$

$$y_j = \lambda_{yj} \eta_1 + \varepsilon_j, \text{ for } j = 1,2,3$$

$$\eta_1 = \beta_1 \xi_1 + \beta_2 \xi_2 + \zeta_1$$

A discussion for a later date...or following this presentation for those who are interested.

A Note About Score Calculation

- Attributes (questions on the survey) are typically answered on a 1-10 scale
 - Social science research shows 7-10 response categories are optimal
 - Customers are familiar with a 10 point scale
- Before being reported, scores are transformed from a 1-10 to a 0-100 scale
 - The transformation is strictly algebraic; e.g.

Orig. (1-10)	Trans. (0-100)
1	0
2	11.1
3	22.2
8	77.8
9	88.9
10	100

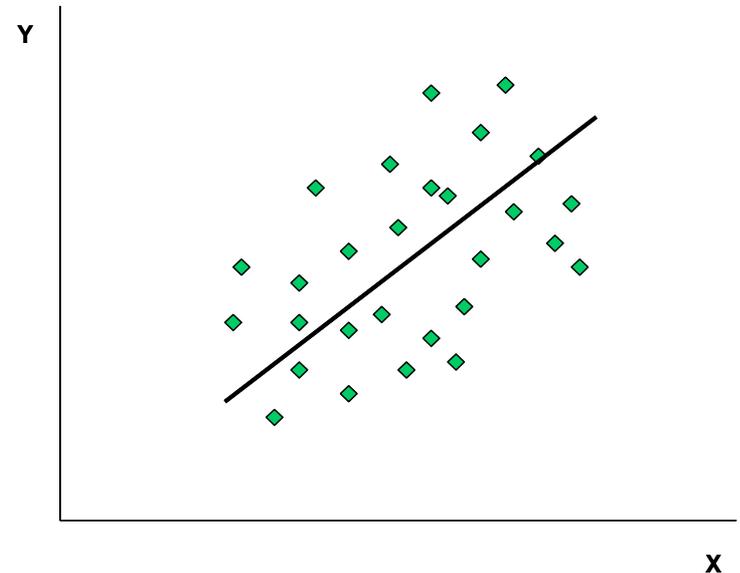
- The 0-100 scale simplifies reporting:
 - Often no need to report many, if any, decimal places
 - 0-100 scale is useful as a management tool

Deriving Impacts

- Remember high school algebra?
The general formula for a line is:

$$y = mx + b$$

- The basic idea is that x is a “cause” and y is an “effect”, and m represents the slope of the line – *summarizing the relationship between x & y*



- CFI Group uses a sophisticated variation of the advanced statistical tool, Partial Least Squares (PLS) Regression, to determine impacts when many different causes (i.e., quality components) simultaneously effect an outcome (e.g., Customer Satisfaction)**